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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,980	02/09/2004	Luc Vanmaele	27500-GN03027	9601

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EXAMINER

LEE, SIN J

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/774,980

Applicant(s)

VANMAELE ET AL.

Examiner

Sin J. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 55 is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-12, 15, 16, 18-21, 23-41, 44, 45, 47-50, 52-54 and 56 is/are rejected.
- 7) ☒ Claim(s) 13, 14, 17, 22, 42, 43, 46 and 51 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Claim Rejections - 35 USC § 103

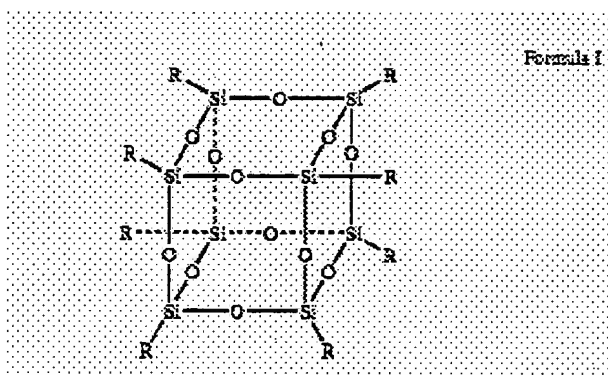
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-6, 8-12, 15, 16, 18, 21, 23, 24, 54, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamata et al (6,110,987) in view of Nguyen et al (US 6,664,024 B1).

Kamata teaches a *photocurable composition* comprising a compound with an ethylenically unsaturated bond, a cationic dye, a quaternary boron salt sensitizer, and an *UV radical polymerization initiator* (see claim 1). Kamata states that his composition can be used in the fields of painting, adhesives, tackifiers, *inks* and holographic materials (col.27, lines 39-42). As one of examples for the compound having an

ethylenically unsaturated bond, Kamata includes (*meth*)*acrylic* polyfunctional polyorganosilsesquioxane (col.12, lines 66-67, col.13, lines 1-8, lines 37-38, lines 50-51). Kamata does not teach detail as to what specific compound can be used as the (*meth*)*acrylic* polyfunctional polyorganosilsesquioxane.

Nguyen teaches the use of following polyhedral oligomeric silsesquioxane (POSS) compound in a *photocurable* composition in order to provide superior thermal stability and mechanical properties to the cured product (see col.2, lines 16-25, col.4, lines 49-67, col.5, lines 1-14);



As one of preferred examples of the compound of Formula I, Nguyen teaches (col.5, lines 25-30)

3-(3,5,7,9,11,13,15-Heptacyclopentapentacyclo[9.5.1.1^{3,6}.1^{4,5}.1^{7,8}.1^{9,10}.1^{12,13}]octasiloxan-1-yl)propyl methacrylate (available from Aldrich Chemical, Oakville, Ontario).

Based on Kamata's teaching (that (*meth*)*acrylic* polyfunctional polyorganosilsesquioxane can be used in his photocurable composition as his compound having an ethylenically unsaturated bond) in view of Nguyen's teaching (that using the POSS compound such as

3-(3,5,7,9,11,13,15-Heptacyclopentylpentacyclo
[9.5.1.1^{3,6}.1^{5,15}.1^{7,13}]octasiloxan-1-yl)propyl meth-
acrylate (available from Aldrich Chemical, Oakville,
Ontario).

in a photocurable composition provides superior thermal stability and mechanical properties to a cured product), it would have been obvious to one of ordinary skill in the art to use Nguyen's POSS compound in Kamata's photocurable composition as his compound having an ethylenically unsaturated bond in order to provide superior thermal stability and mechanical properties to his cured product. Thus, Kamata in view of Nguyen would render obvious present POSS of claims 1-4 (present n being 8, seven of present R groups being alkyl groups and the other R group being a propyl *methacrylate* group).

Kamata teaches (col.14, lines 35-50) that one or more coloring materials selected from coloring pigments, coloring dyes and bright pigments may be used with the photocurable composition of his invention in the amount of 0-200 parts by weight to 100 parts by weight of his compound with an ethylenically unsaturated bond. This range overlaps with present range of claim 1 and thus would render present range *prima facie* obvious. In the case "where the [claimed] ranges overlap or lie inside ranges disclosed by the prior art," a *prima facie* case of obviousness would exist which may be overcome by a showing of unexpected results, In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976). Therefore, Kamata in view of Nguyen would render obvious present inventions of claims 1-5, 8-11, 23, and 24 (it is the Examiner's position that the composition taught by Kamata in view of Nguyen would inherently have the present viscosity range of claim 23 and would inherently be capable of being a radiation

curable ink-jet ink composition as presently recited in claim 24 because the composition taught by Kamata in view of Nguyen teaches the present composition of claim 1).

With respect to present claim 6, Kamata teaches (col.12, lines 63-65) that his UV radical polymerization initiators may be used in combinations of 2 or more. Therefore, Kamata in view of Nguyen would render obvious present invention of claim 6.

With respect to present claims 12 and 54, a phthalo-cyanine blue pigment (present Pigment Blues) is exemplified in Kamata's Table 2 as his coloring material. Thus, Kamata in view of Nguyen would render obvious present invention of claims 12 and 54.

With respect to present claims 15 and 16, Kamata teaches (col.13, lines 1-8) that 2 or more of his compound having at least one radical polymerizable ethylenically unsaturated bond can be used, and urethane acrylate ("AT-600") is exemplified in his Table 2 as a compound with ethylenically unsaturated bond. Based on this teaching in view of Nguyen, it would have been obvious to one of ordinary skill in the art to use the combination of Nguyen's POSS compound (as discussed above) and urethane acrylate as Kamata's compounds with ethylenically unsaturated bond with a reasonable expectation of obtaining a photocurable composition which provides a cured product with an excellent appearance. Thus, Kamata in view of Nguyen would render obvious present inventions of claims 15 and 16.

With respect to present claims 18 and 56, Kamata teaches (col.15, lines 7-21) that his photocurable composition may be used in a form diluted with an organic

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solvent. Therefore, Kamata in view of Nguyen would render obvious present invention of claim 18.

With respect to present claim 21, Kamata teaches (col.15, lines 29-32) that his photocurable composition can contain an antioxidant. Therefore, Kamata in view of Nguyen would render obvious present invention of claim 21.

4. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamata et al (6,110,987) in view of Nguyen et al (US 6,664,024 B1) as applied to claim 1 above, and further in view of Wolk et al (6,140,009) and Lee et al (US 2004/0162397 A1).

Kamata in view of Nguyen is discussed above in Paragraph 4. Kamata teaches (col.15, lines 29-34) that his photocurable composition can contain a *conductive material*, but without giving any detail as to what kind of conductive material can be used. Wolk et al state (col.13, lines 64-67, col.14, lines 1-3) that conductive materials include metals, alloys, metallic compounds, metal oxides, conductive ceramics, conductive dispersions, and *conductive polymers* including polyaniline. As evidenced by Lee, [0004] and [0006], conductive polymers are known to be variously processed, lightweight, and producible in commercial quantities and also, polyaniline is known to be relatively inexpensive and chemically very stable material. Based on these teachings, it would have been obvious to one skilled in the art to use a conductive polymer such as polyaniline in Kamata's photocurable material as his conductive material because Wolk and Lee teach advantages of using conductive polymers such as polyaniline.

Therefore, Kamata in view of Nguyen, and further in view of Wolk and Lee would render obvious present inventions of claims 19 and 20.

5. Claims 25-41, 44, 45, 47, 50, 52, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamata et al (6,110,987) in view of Nguyen et al (US 6,664,024 B1), and further in view of Chieng (4,978,969).

Kamata in view of Nguyen is discussed above in Paragraph 4 with respect to the present radiation curable ink composition. As discussed above Kamata teaches that his photocurable composition can be used as inks, but he does not teach any detail as to what process can be used in using his composition as inks. Chieng teaches (claim 1, abstract, and col.2, lines 5-11) a method of printing comprising the steps of supplying a thermal ink jet printing apparatus with an UV curable ink composition, delivering the ink composition from the thermal ink jet printing apparatus to a substrate (especially plastics), and applying UV light to the substrate with the ink composition thereon in an amount sufficient to form a permanent image on the substrate from the ink composition. Chieng states that his method enables plastic components and other materials (e.g., metals) to be marked in a highly effective matter. Since Kamata teaches that his photocurable composition can be used as inks without teaching a method of doing so, it would have been obvious to one of ordinary skilled in the art to use Chieng's method, which enables plastic components and other materials (e.g., metals) to be marked in a highly effective matter, employing the photocurable composition taught by Kamata in view of Nguyen. Therefore, Kamata in view of Nguyen, and further in view of Chieng would render obvious present inventions of claims 25-41, 44, 45, 47, 50, 52, and 53.

6. Claims 48 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamata et al (6,110,987) in view of Nguyen et al (US 6,664,024 B1) and Chieng (4,978,969) as applied to claim 25 above, and further in view of Wolk et al (6,140,009) and Lee et al (US 2004/0162397 A1).

Kamata in view of Nguyen and Chieng with respect to present claim 25 is discussed above in Paragraph 6.

Kamata teaches (col.15, lines 29-34) that his photocurable composition can contain a *conductive material*, but without giving any detail as to what kind of conductive material can be used. Wolk et al state (col.13, lines 64-67, col.14, lines 1-3) that conductive materials include metals, alloys, metallic compounds, metal oxides, conductive ceramics, conductive dispersions, and *conductive polymers* including polyaniline. As evidenced by Lee, [0004] and [0006], conductive polymers are known to be variously processed, lightweight, and producible in commercial quantities and also, polyaniline is known to be relatively inexpensive and chemically very stable material. Based on these teachings, it would have been obvious to one skilled in the art to use a conductive polymer such as polyaniline in Kamata's photocurable material as his conductive material because Wolk and Lee teach advantages of using conductive polymers such as polyaniline. Therefore, Kamata in view of Nguyen and Chieng, and further in view of Wolk and Lee would render obvious present inventions of claims 48 and 49.

Allowable Subject Matter

7. Claims 13, 14, 17, 22, 42, 43, 46, and 51 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Kamata does not teach or suggest present vinyl ether (meth)acrylates of claims 13 and 42. Kamata does not teach or suggest present solvent (water) of claims 17 and 46. Kamata does not teach or suggest present dendrimer of claims 22 and 51.
8. Claim 55 is allowed. Kamata does not teach or suggest present vinyl ether (meth)acrylates of claim 55.

Response to Arguments

9. Applicants argue that one skilled in the art would be led away from combining Kamata et al and Nguyen et al due to the expected deterioration of the shaping speed caused by the presence of a colorant citing col.1, lines 61-67 (under "background of the invention") in Nguyen et al. Applicants therefore argue that it is only in hindsight based on the present invention that one of skill in the art would consider combining art in contradiction to the clear expectation of failure.

However, Nguyen's photocurable composition *does* contain a colorant (see col.2, lines 44-51). For example, Nguyen includes xanthene derivatives (which are colorants) as one of preferred examples for his color generating compounds (see col.4, lines 15-17). Therefore, it is the Examiner's position that one skilled in the art would *not* be led away from combining Kamata and Nguyen. As to applicants' argument concerning hindsight, any judgment on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it take into account only knowledge which was within

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the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper. In re McLaughlin 443 F.2d 1391, 1395, 170 USPQ 209, 212 (CCPA 1971).

Based on Kamata's teaching that (*meth*)acrylic polyfunctional polyorganosilsesquioxane can be used in his photocurable composition as his compound having an ethylenically unsaturated bond in view of Nguyen's teaching that using the POSS compound such as

3-(3,5,7,9,11,13,15-Heptacyclopentylpentacyclo [9.5.1.1^{3,5}.1^{5,7}.1^{7,9}]octasiloxan-1-yl)propyl methacrylate (available from Aldrich Chemical, Oakville, Ontario).

in a photocurable composition provides superior thermal stability and mechanical properties to a cured product, it would have been obvious to one of ordinary skill in the art to use Nguyen's POSS compound in Kamata's photocurable composition as his compound having an ethylenically unsaturated bond in order to provide superior thermal stability and mechanical properties to his cured product.

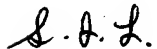
For the reasons stated above, present rejections still stand.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

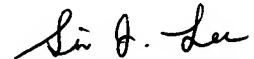
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee
October 31, 2005



SIN LEE
PRIMARY EXAMINER